



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/550,896 | 09/27/2006 | Hisashi Miyamori | 4035-0175PUS1 | 1709 |
| 2292 7590 12/01/2008 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747 | | | | |
| EXAMINER NEWMAN, MICHAEL A | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 2624 | | | | |
| NOTIFICATION DATE | | DELIVERY MODE | | |
| 12/01/2008 | | ELECTRONIC | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/550,896

Applicant(s)

MIYAMORI, HISASHI

Examiner

MICHAEL A. NEWMAN

Art Unit

2624

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 12 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 January 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 22nd, 2008 has been entered.

Response to Amendment

2. The amendment filed on September 22nd, 2008 has been entered.
3. The amendment to the specification is acknowledged.
4. In view of the amendment to the claims, the amendment of claims 1, 2, 6, 7, and 12 is acknowledged. Claims 13 and 14 were previously cancelled.

Response to Arguments

5. Applicant's arguments filed on September 22nd, 2008 have been fully considered but they are not persuasive.
 - a. In pages 9 to 11 of the Remarks, regarding the 35 U.S.C. 103 rejection of the independent claims 1 and 7 over Martins (U.S. Patent No. 6,950,123), "Martins", and Averbuch et al. (U.S. Patent No. 7,085,401), "Averbuch"; Applicant's Representative submits that the combination does not teach the

newly added limitations requiring eliminating a line segment having only two end points from a line-shaped image object. Specifically, that Martins teaches eliminating an entire area adjacent to the field lines and not just the line segments. As correctly noted by Applicant's Representative, Martins does appear to teach eliminating an entire field area, including the line segments corresponding to the court/field boundaries, in order to identify the regions of interest corresponding to the moving players. The Examiner would like to point out that the current claim language requires that line segments having only two end points (i.e. any line segment with a start and an end), belonging to a line-shaped image object that overlaps a moving image object, be eliminated from the moving image object. By subtracting the field model from the current image, Martins eliminates the field area and also the field/court marking line segments. The Examiner *respectfully* submits that, contrary to Applicant's Representative interpretation, the current claim language does not actually preclude the elimination of areas other than the field line segments.

- Applicant's Representative further submission regarding Averbuch has been addressed in the Advisory Action Communication mailed on August 20th, 2008 (Paper No. 20080815).

b. In the remainder of the Remarks, Applicant's Representative submits that the further rejections of the dependent claims under 35 U.S.C. 103 since the aforementioned limitations of the independent claims are not taught by the

combination. However, as discussed above, the limitations are taught by the combination.

In view of this reasonable interpretation of the claims and the prior art, the Examiner *respectfully* insists that the standing rejections under 35 U.S.C. 103 are proper.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Lines 1 - 4 in claims 1 and 7 recite: "eliminating a line segment having only two end points *from* a line-shaped image object overlapping a moving image object..., *from* the moving image object." Lines 5 – 6 in claims 1 and 7 recite: "extracting the line segment having only two endpoints from the line-shaped image object." Lines 7 - 8 in claims 1 and 7 recite: "eliminating the line segment having only two end points *from* line-shaped image object *from* the moving image object." It is unclear as to whether the line segment is eliminated from the line-shaped image object, eliminated from the moving image object, or whether the line segment is in/part of the line-shaped image object and both or one are

eliminated from the moving image object. The claims therefore fail to clearly set forth the scope of the invention and are rendered indefinite. For the purpose of further examination, the claim language has been interpreted as eliminating a line segment, in the line-shaped image object, from the moving image object.

Claim Rejections - 35 USC § 101

8. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

9. Claims 1 – 6 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim(s) recite a series of steps or acts to be performed, the claim(s) neither transform underlying subject matter nor positively tie to another statutory category that accomplishes the claimed method steps, and therefore do not qualify as a statutory process. For example in order for a process to be "tied" to another statutory category, the structure of another statutory category, such as a processor or processing

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

apparatus, should be positively recited in a step or steps significant to the basic inventive concept, and NOT just in association with statements of intended use or purpose, insignificant pre or post solution activity, or implicitly.

Claim Rejections - 35 USC § 103

10. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

11. Claims 1 – 4, 6 – 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martins (U.S. Patent No. 6,950,123) in view of Averbuch et al. (U.S. Patent No. 7,085,401). Hereinafter referred to as Martins and Averbuch, respectively.

a. Regarding claims 1, 6, 7 and 12, Martins teaches an image processing apparatus and method for eliminating a line segment having only two end points from a line-shaped image object (**Martins Col. 4 lines 28 – 31 – “Field Model”**), overlapping a moving image object in a single image comprising effective or ineffective pixels, from the moving image object (**Martins Col. 5 lines 60 – 66 – “The players”**), the apparatus comprising: a line segment extraction means for extracting the line segment having only two end points from the line-shaped image object (**Martins Col. 4 lines 28 – 31 and lines 45 - 46**) [**Note that a soccer field consists of line segments similar to those of the exemplary tennis court in the disclosure**]; a line-shaped image elimination means for eliminating the line segment having only two end points from the line-shaped image object from the moving image object (**Martin Col. 5 line 64 - Col. 6 line**

3); an image scan means for scanning a vicinity region of the line segment having only two end points on the moving image object and sequentially extracting pixels to be scanned (**Martin Col. 6 lines 1 – 4**) [**Note that players are scanned and converted into blobs**]; an effective pixel determination means for determining whether or not the extracted pixels to be scanned are the effective pixels (**Martin Col. 6 lines 8 – 10**). Martin proceeds to track players by identifying the largest *connected* components in each region of interest (**Martin Col. 6 lines 58 – 60**), in order to improve accuracy; Martin suggests applying noise floor processing and morphological filtering to the difference image. However, **Martin fails to teach** a pixel interpolation means for dropping a perpendicular from the pixels to be scanned that are determined to be the effective pixels at the effective pixel determination step to a nearest line segment and setting all the pixels on the perpendicular as the effective pixels. **Pertaining to the same field of endeavor Averbuch teaches an automatic moving object extraction system in which after an initial identification of moving segments, a region-growing algorithm is applied to eliminate missing pixels (Averbuch Col. 24 lines 54 – 57). Specifically Averbuch teaches for each object, extracting edge line information using, for example, the Hough transform, and for extracted edge line belonging to an object, interpolation is performed to obtain a complete contour. However, to fill missing pixels of each object, Averbuch teaches choosing the lowest previously-derived real point on the object, drawing the perpendicular line of the lowest pixel**

until it hits another real point. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to, as suggested by Martin, carry out a morphological operation such as the region growing implementation taught by Averbuch on Martin's extracted player blobs to improve the centroid location assigned to the largest connected component and thus improve player tracking.

b. Regarding claims 2 and 8, Martin further teaches that the image is one frame in the moving image object comprising a plurality of frames (**Martin Col. 3 lines 3 – 5**).

c. Regarding claims 3, 4, 9 and 10 Martin further teaches that the image is an image obtained by subjecting a single frame or plural frames in the moving image object comprising the plurality of frames to predetermined arithmetic processing, wherein the arithmetic processing is any one of processing for determining a difference between two arbitrary frames in the moving image or processing for determining a change region in one arbitrary frame in the moving image. (**Martin Col. 5 line 64 – Col. 6 line 3**) [**Note that the difference operation is arithmetic processing**].

Allowable Subject Matter

12. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL A. NEWMAN whose telephone number is (571)270-3016. The examiner can normally be reached on Mon - Thurs from 9:30am to 6:30pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew C. Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew C Bella/
Supervisory Patent Examiner, Art
Unit 2624

M.A.N.